ALBERTA NATURAL HERITAGE INFORMATION CENTRE
PRELIMINARY PLANT COMMUNITY TRACKING LIST

Compiled by Lorna Allen
April, 2000

Alberta
ENVIRONMENT

NATURAL HERITAGE INFORMATION CENTRE
ALBERTA

Front page: white birch / water birch / common bearberry (*Betula papyrifera / Betula occidentalis / Arctostaphylos uva-ursi*) woodland

The white birch / water birch / common bearberry woodland (*Betula papyrifera / Betula occidentalis / Arctostaphylos uva-ursi*) woodland is an open white birch community that is known only from the Jasper area in Alberta's Montane Natural Subregion. This community type occurs on dry (subxeric) slopes of moderately steep, south aspects. Tree cover is relatively sparse, but individual trees may attain heights of 17 m. Ground cover is dominated by clumps of ground juniper (*Juniperus communis*), common bearberry (*Arctostaphylos uva-ursi*) and rush-like sedge (*Carex scirpoidea*) within patches of unvegetated scree.

For copies of this report, contact:
Alberta Natural Heritage Information Centre
Alberta Environment
2nd Floor, 9820 – 106 Street
Edmonton, AB T5K 2J6
780-427-7702

Pub No. T/527
ISBN No. 0-7785-1147-2 Printed Edition
ISBN No. 0-7785-1148-0 On-line Edition
Web Site: http://www.gov.ab.ca/env/

This publication may be cited as:

Allen, L. 2000. Alberta Natural Heritage Information Centre Preliminary Plant Community Tracking List, Alberta Environment, Edmonton, Alberta.

ALBERTA NATURAL HERITAGE INFORMATION CENTRE
PRELIMINARY PLANT COMMUNITY TRACKING LIST

Compiled by Lorna Allen
April 2000

The Alberta Natural Heritage Information Centre (ANHIC) is a joint project of The Nature Conservancy, Canadian Heritage, Alberta Region and Alberta Environmental Protection. The Devonian Botanic Garden of the University of Alberta is an affiliate.

The purpose of the Centre is to collect, evaluate and make available information on the elements of natural biodiversity of Alberta – plants, animals, natural plant communities and landscapes. ANHIC develops tracking lists of elements that are considered of high priority because they are rare or special in some way. Tracking lists serve as a focus for data gathering to increase our knowledge and understanding of the elements of Alberta's biodiversity. The lists are under constant review and are updated periodically. Elements may be added, deleted, or their status may be revised, as data become available.

Developing A Plant Community Tracking and Watch List

Natural plant communities are defined as recurring assemblages of plant species; the species occurring together because they respond similarly to a variety of site attributes.* To develop an initial tracking list of natural plant community elements, publications describing vegetation types in Alberta were reviewed and discussions were held with knowledgeable individuals. Vegetation types that have been described as 'unusual', 'uncommon', 'of limited extent' or 'encountered infrequently' by vegetation experts were considered for inclusion on the Preliminary Plant Community Tracking List. Vegetation types that have been described as 'in decline' or 'threatened' by vegetation experts were also considered for inclusion. Only natural communities were considered.

Appended to the Preliminary Tracking List is a "watch list". This is an initial list of communities that appear to have a restricted distribution in Alberta and for which information will be collected to ascertain trends.

* Grossman, D.H., K.L. Goodin and C.L. Reuss, eds. 1994. Rare Plant Communities of the Conterminous United States, an Initial Survey. The Nature Conservancy, Arlington VA.

Alberta Natural Heritage Information Centre, Alberta Environment, 2nd Floor 9820 106 Street, Edmonton, AB T5K 2J6 (780)427-5209

The assistance of the following individuals in developing this tracking and watch list is gratefully acknowledged: Peter Achuff, Barry Adams, Harry Archibald, Cheryl Bradley, Ian Corns, Dave Downing, Joyce Gould, Derek Johnson, Dan MacIsaac, Kevin Timoney, Garry Trottier, Cliff Wallis and Mike Willoughby. A number of other individuals have assisted in providing comments and information on the plant community types in Alberta and on the tracking list, including Dana Bush, Graham Griffiths, Wayne Strong and Kathleen Wilkinson.

The development of a tracking list for Alberta's special plant communities is at a preliminary stage, with many more references to review and many more knowledgeable individuals to contact. More studies are required, as some aspects of Alberta's vegetation are poorly known. It is hoped that this list will stimulate dialog on the plant community aspect of biodiversity, help us to move toward some understanding of those types that are unusual and help to identify areas and types for which information is lacking.

Rank

Communities are ranked on a global, national and sub-national scale of 1 to 5 in a manner similar to the system developed by The Nature Conservancy for ranking species. A rank of G1 (Global 1) indicates that a community is of high conservation concern due to rarity, endemism and / or threats, and a rank of G5 (Global 5) indicates a community that is demonstrably widespread and abundant. Similarly, a rank of N1 (National 1) or S1 (Sub-National 1) indicates that the community is of high conservation concern at the national or state / provincial level, respectively.

The two major criteria in determining a community's rank are the total number of occurrences and the total area (hectares) of the community, range-wide. Measures of geographic range, trends in status (expanding or shrinking range), trends in condition (declining condition of remaining hectares), threats and fragility are secondary ranking factors that may be considered when assigning a rank. The criteria used to assign a rank to a particular community are documented using a standardised format. The guidelines used to rank communities are as given in Table 1.

Estimating Ranks

While community ranking intends to integrate all available information, it is usually necessary to do a preliminary ranking when the information is incomplete. Although these methods are standardised, applying conservation ranks to communities is nonetheless a subjective process. The relative importance of and amount of information available for each of the ranking factors vary for each community. Ranks are assigned based on the best available information and are refined over time. This ranking procedure provides a reasonable estimate of the community rarity, although some degree of error in inherent.

Table 1. Community Ranking Guidelines	
RANKS*	GENERAL CRITERIA
G1(S1)	Five or fewer occurrences or very few remaining hectares
G2(S2)	Six to 20 occurrences or few remaining hectares
G3(S3)	21 to 100 occurrences. May be rare and local throughout its range or found locally, even abundantly, in a restricted range (e.g. a single western province or a physiographic region in the East).
G4(S4)	Apparently secure globally (State / Province wide), though it may be quite rare in parts of its range, especially at the periphery.
G5(S5)	Demonstrably secure globally (State / Province wide), though it may be quite rare in parts of its range, especially at the periphery.
GU(SU)	Status is uncertain
GH(SH)	Historic. Presumed eliminated in the province, with little or no likelihood it will be rediscovered. There may be the potential for restoration.
GX(SX)	Believed to be eliminated throughout range with virtually no likelihood that it will be rediscovered (e.g. American Chestnut Forest)
GP(SP)	Potentially exists. Further documentation needed.
G? (S?)	Element is not yet ranked.
MODIFIERS	
Q	Can be added to any global rank to denote questionable taxonomy (e.g. G2Q = 6 to 20 known occurrences, but questions exist concerning the classification of this type).
?	Can be added to any rank to denote an inexact numeric rank (e.g. G1? = Believed to be 5 or less occurrences, but some doubt exists concerning status).
* ranks can be combined to indicate a range (e.g. G2G3 = May be between 6 to 100 occurrences throughout range, but the exact status is uncertain). Combined ranks indicate a larger margin of error than ranks assigned a "?" qualifier	

Organisation of the Lists

Plant communities on the Preliminary Tracking List are organized first by the following physiognomic classes:

- Forest / Woodland
- Shrubland
- Dwarf Shrubland
- Herbaceous
- Sparsely Vegetated

Within these classes, the types are grouped by dominant species, then listed by plant community, when that information is available.

Communities are named according to the dominant species found in each vegetation layer. Species within the same vegetation layer are separated by an "-", layers are separated by an " / ". A forest community, for example, may have several layers, with the community name put together as follows:

tree layer 1 / tree layer 2 / tall shrub / medium shrub / low shrub-grass-herb-moss-lichen.

A short description of each type is included, and when available, references are supplied that give more detail on the type. The preliminary provincial rank is given directly opposite the community name. Tables listing the plant communities on the preliminary tracking list, by natural region, in alphabetical order of scientific name are provided in Appendix 1. Common names for the community types are also included in those tables.

Updates and Additional Information

We are asking for your help in the development of the plant community tracking list and in the documentation of community locations.

Information on the ANHIC is available through the Internet at http: / / www.gov.ab.ca / env / parks / anhic / anhic.html or by contacting:

Dan Chambers
Co-ordinator, Alberta Natural Heritage Information Centre
Alberta Environmental Protection
2nd Floor, 9820 – 106 St., Edmonton AB T5K 2J6
Telephone (780) 427 9706, Fax 427 5980
Email: dan.chambers@gov.ab.ca

Comments on this list or requests to be put on the mailing list for updates, should be directed to:

Lorna Allen
Ecologist, Alberta Natural Heritage Information Centre
Alberta Environmental Protection
2nd Floor 9820 – 106 St., Edmonton AB T5K 2J6
Telephone (780) 427 6621 Fax 427 5980
Email: lorna.allen@gov.ab.ca

Preliminary Alberta Plant Community Tracking List

FOREST / WOODLAND SRANK

Acer negundo group S1S2

Acer negundo / Prunus virginiana

- only natural communities to be tracked
- found in coulees and on protected slopes, primarily in the Grassland Natural Region, and extending into the Central Parkland Subregion.
- With disturbance such as cattle grazing, the tall shrub layer of *Prunus virginiana* of undisturbed stands may be replaced by a low shrub layer of *Symphoricarpos occidentalis* and *Rosa*
- *Carex sprengelii* is often a prominent understory species, replaced by weeds in disturbed stands.
- Often bisected by small drainages edged by species such as *Glyceria striata*

Betula papyrifera group

Betula papyrifera / Betula occidentalis / Arctostaphylos uva-ursi S1

- open birch on subxeric, Montane, moderately steep, south aspects
- tree cover is sparse, but individual trees may attain heights of 17 m
- ground cover is dominated by clumps of *Juniperus communis, Arctostaphylos uva-ursi* and *Carex scirpoidea* within patches of unvegetated scree
- type O16 (Corns and Achuff 1982)

Larix laricina group

Larix laricina / Carex prairea S1

- a Dry Mixedwood wetland community of constant discharge areas (likely calcareous)
- *Salix candida* forms a scattered, discontinuous shrub layer
- *Carex prairea* is the dominant species in the herb layer, but *C. capillaris, C. leptalea* and *C. gynocrates* are locally abundant

Larix lyallii group

Larix lyallii / Luzula hitchcockii S2?

- mesic Upper Subalpine sites with moderate to steep slopes and north to easterly aspect
- tree layer may include some *Abies lasiocarpa* and *Picea engelmannii*
- the herb-dwarf shrub layer is well developed
- type C75 (Achuff *et al.* 1997)

***Larix occidentalis* group**

Larix occidentalis / Calamagrostis rubescens **S1**

- in Alberta, *Larix occidentalis* is usually found only as scattered trees
- stands have been described in the Subalpine Natural Subregion in the Crowsnest area
- typically occur on north facing slopes with a dense canopy of *Larix*
- there is often a second tree layer of mixed species including *Abies lasiocarpa* and *Pinus contorta*
- the understory is sparse, with the ground heavily littered with needles
- patches of *Rubus parviflorus* form where more light reaches the understory as a result of small canopy gaps

***Picea engelmannii* group**

Picea engelmannii - Abies lasiocarpa / Dryas octopetala **S2S3**

- an open tree-line community of steep slopes
- an Upper Subalpine, Front Range type
- type O19 (Corns and Achuff 1982, Achuff *et al.* 1986)

Picea engelmannii – Abies lasiocarpa / Salix planifolia / Hylocomium splendens **S1**

- open-canopied forest with patchy willow and a relatively continuous feathermoss carpet (Strong 1996)
- a Front Range Subalpine type

Picea engelmannii – Abies lasiocarpa / Salix vestita / Cassiope tetragona **S2**

- a Front Range permafrost community of the Subalpine
- found on moderate to steep, north-facing slopes, usually on moraine or colluvium
- the tree layer is often sparse and the surface often soliflucted
- type C24 (Corns and Achuff 1982)

Picea engelmannii / Leymus innovatus (Elymus innovatus) **S2**

- front range community of mesic to subxeric sites on steep, south facing slopes in the Upper Subalpine
- distinguished from similar types by low (<25%) feathermoss cover
- type C33 (Corns and Achuff 1982, Achuff *et al.* 1986)

Picea engelmannii / Salix drummondiana **S1?**

- open forest on Subalpine alluvial flats
- has a diverse shrub component with *S. drummondiana* clearly dominant (Lee *et al.* 1982)

Picea engelmannii / Salix spp. **S2?**
- moderately-well developed shrub layer of *Salix vestita, S. hastata, S. planifolia* and *S. barrattiana* (Kondla 1978)
- open spruce on glacial valley train deposits in the Lower Subalpine
- similar to WW1 ecosite of Banff and Jasper NPs, an ecosite of restricted distribution (Holland and Coen 1983)

***Picea glauca* group**

Picea glauca / Alnus tenuifolia – Betula neoalaskana / Equisetum pratense / Hylocomium splendens alluvial forest **S3**
- silt terrace community of major river valleys of NW Canada (Timoney 1996)
- old-growth forest with tall trees (40-46 m) and high structural, functional and biological diversity
- characterised by a deep accumulation of living mosses and a high cover of epiphytes

Picea glauca / Betula pumila-Salix spp. / *Carex* spp. **S1?**
- poorly-drained Montane wetland complex of peaty gleysols, interspersed with calcium-rich pools with a diverse flora
- micro-hummocky
- open tree canopy and a well-developed shrub layer of *Betula pumila, Salix*, young *Picea glauca* regeneration, *Potentilla fruticosa*, and on drier microsites, *Lonicera involucrata, Arctostaphylos uva-ursi* and *Juniperus horizontalis*
- additional species are *Carex richardsonii, Carex eburnea* and *C. scirpoidea*

Picea glauca / Cetraria islandica **S1**
- open park-like white spruce on the upper slopes of a high sand hill
- a Central Mixedwood community considered similar to timberline types more typically found far to the north east (Raup 1935)

Picea glauca / Thuidium abietinum **S2S3**
- mesic Montane forests on north-facing slopes
- found on highly calcareous eolian and fluvial landforms
- dominance of *Thuidium abietinum* in the moss layer characteristic
- type C2 (Corns and Achuff 1982)

Picea glauca / Rosa acicularis / Thuidium abietinum **S1**
- Montane loess deposition forests on level to moderately sloping, north-facing sites
- dominance of *Thuidium abietinum* in the moss layer characteristic
- type C27 (Corns and Achuff 1982)

Picea glauca / Shepherdia canadensis / Thuidium abietinum **S2**
- Montane to Subalpine loess deposition closed forests, generally on north-facing slopes of eolian and fluvial landforms
- dominance of *Thuidium abietinum* in the moss layer characteristic
- type C26 (Corns and Achuff 1982, Achuff *et al.* 1986)

***Pinus albicaulis* group**

Abies lasiocarpa – Pinus albicaulis – Picea engelmannii / Empetrum nigrum **S2**
- a high Subalpine community found at 1800 to 2200m
- on stony, mesic sites of variable aspect
- may be restricted to acidic parent materials, north of the Bow River (Timoney 1999)

Abies lasiocarpa – Pinus albicaulis / Xerophyllum tenax **S1S2**
- a community of mesic to subxeric lower Subalpine sites (Timoney 1999)
- found on slopes of moderate to steep, southerly and westerly aspects

Pinus albicaulis-Abies lasiocarpa / Luzula hitchcockii-Vaccinium myrtillus **S1S2**
- found on moderate to steep, south to west-facing subxeric to mesic Upper Subalpine sites
- commonly with an open canopy
- a well developed herb-dwarf shrub layer that often includes Xerophyllum tenax
- type O30 (Achuff et al. 1997)

Pinus albicaulis – Picea engelmannii / Dryas octopetala **S1**
- a Waterton type of exposed, subxeric Upper Subalpine sites
- found on moderate to steep slopes from 2050 to 2300 m
- type O31 (Achuff et al. 1997)

Pinus albicaulis – Pinus contorta / Juniperus communis – Leymus innovatus (Elymus innovatus) – Linnaea borealis **S2S3**
- characteristic Subalpine type, transitional to *Pinus contorta* (Timoney 1999)
- found on subxeric, well-drained sites of south-west aspect with significant bedrock exposure and bare mineral soil

Pinus albicaulis / Juniperus communis – Arctostaphylos uva ursi **S2S3**
- widespread Upper Subalpine type (Timoney 1999)
- found on subxeric sites of south or south-west aspect
- typically on steep slopes with significant bedrock exposure and bare mineral soil

***Pinus flexilis* group**

Abies lasiocarpa – Pinus flexilis–Populus tremuloides / Thalictrum venulosum **S2?**
- a south-western Alberta Montane to lower Subalpine community found at 1800 to 1900m
- found on colluvial or morainal, northwest-facing slopes
- restricted in distribution but may be a transitional type (Timoney 1999)

Pinus flexilis / Arctostaphylos uva ursi - Juniperus horizontalis **S2S3**
- characteristic of south-west Montane sites (Timoney 1999)
- rapidly to well-drained sites on lower to mid slope with bedrock close to the surface

Pinus flexilis - Pseudotsuga menziesii / Juniperus spp. / Arctostaphylos uva-ursi **S2**
- an open forest with an understory dominated by *Juniperus communis* and *J. scopulorum*
- occurs in the Montane on steep, south-facing erosional scarps
- this is the community type at the most northerly extent of the range of *Pinus flexilis*
- type O2 (Corns and Achuff 1982, Achuff *et al.* 1986)

Pseudotsuga menziesii - Pinus flexilis / Juniperus communis / Festuca campestris **S2S3**
- characteristic of south-west Montane sites (Timoney 1999)
- rapidly to well-drained sites on upper slopes and crests at moderate elevation
- bedrock is not close to the surface

***Populus balsamifera* group**

Populus balsamifera / Alnus tenuifolia / Cornus stolonifera / Equisetum pratense **S3**
- an old growth forest on silt terraces of major river valleys of NW Canada (Timoney 1996)
- characteristic species include *Viburnum edule* and *Rubus pubescens*
- canopy gap type

Populus balsamifera / Viburnum opulus / Matteuccia struthiopteris **S1S2**
- a moist, nutrient-rich community that occurs in seepage areas on hillsides and in depressions
- on pitted moraine and glaciofluvial outwash in the Dry and Central Mixedwood Natural Subregions

Populus balsamifera - P. tremuloides / Alopecurus alpinus - Calamagrostis canadensis **S1S2**
- a Montane community of hygric or subhygric discharge areas, typically on benches of slopes
- a mature mixed poplar stand, with few understory shrubs or herbs and a dense grass layer

***Populus tremuloides* group**

Populus tremuloides / Rubus parviflorus **S2**
- a Foothills Parkland and Montane community found primarily on gentle to steep slopes with a northerly aspect
- found in south west Alberta, type C61 (Achuff *et al.* 1997)

Populus tremuloides / Rubus parviflorus / Aralia nudicaulis **S2S3**
- a Central Mixedwood community found on level to moderate slopes, often associated with seepage areas (Alberta Energy and Natural Resources 1984)
- *Populus tremuloides* is dominant, but *P. balsamifera* is a significant component of some stands
- there is a high forb cover, but low cover of grass or mosses

Populus tremuloides / Salix bebbiana – Corylus cornuta / Calamagrostis canadensis – Matteuccia struthiopteris **S1**

- imperfectly-drained hygric riparian wet meadow in the Central Mixedwood Natural Subregion (Timoney and Robinson 1998, plot bf76)
- the community composition is influenced by a widely-fluctuating water table due to typical riparian processes and beaver activity
- relatively open tree layer with a tall shrub layer of about 10% and a low shrub layer of about 17% cover
- *Calamagrostis canadensis* is the dominant understory species (45% cover) with *Matteuccia struthiopteris* also prominent with 25% cover

Populus tremuloides / Menziesia ferruginea **S1**

- found on cool, steep, northeast-facing seepage slopes in the Upper Subalpine

Populus tremuloides – P. balsamifera / Alnus viridus - Calamagrostis canadensis **S1**

- an open, mature Foothills community type with a tree canopy cover of less than 15%
- alder and marsh reed grass dominate the understory (Willoughby and Downing 1995)

Populus tremuloides / Leymus innovatus (Elymus innovatus) – Aster conspicuus avalanche community **S2**

- Montane to Subalpine avalanche communities on mesic to subxeric, steep, south-facing colluvial slopes
- the trees may be stunted and shrub-like, and the stands are often open
- type C22 (Corns and Achuff 1982)

***Populus X jackii* group**

Populus X jackii – Betula occidentalis / Salix lutea / Stipa comata **S1**

- open cottonwood stands on sand flats
- within sand dune areas of the Dry Mixedgrass Natural Subregion (Adams *et al.* 1997)
- most sand flats are not treed

SHRUBLAND

***Amelanchier alnifolia* group**

Amelanchier alnifolia / Arctostaphylos uva-ursi / Oryzopsis pungens **S2S3**

- found on level, upland pockets in the Dry Mixedwood Natural Subregion
- usually surrounded by Jackpine or Aspen stands
- occurrences usually small
- type DMA7 in Willoughby *et al.* 1997b

***Artemisia cana* group**

Artemisia cana / Stipa comata Shrub Herbaceous **S2S3**

- a small patch type of the Grassland Natural Region, ranked G3 (Comer *et al.* 1999)
- found on benches and slopes of breaks

***Artemisia tridentata* group**

Artemisia tridentata slope community **S1**

- a Montane community of steep, stony, south-west facing colluvial slopes with frequent rock outcrops
- *Amelanchier alnifolia* is often a prominent low shrub, with *Arctostaphylos uva-ursi* a common dwarf shrub
- prominent graminoids are *Festuca idahoensis, Pascopyrum smithii (Agropyron smithii), Elymus lanceolatus (Agropyron dasystachyum)* and *Koeleria macrantha*
- *Balsamorhiza sagittata* is prominent in spots as is *Lupinus sericeus*
- previously listed as *Artemisia tridentata – Saxifraga bronchialis* and *Artemisia tridentata – Balsamorhiza sagittata* types (Fairbarns 1986)
- lumped here because of similarities in habitat and species

Artemisia tridentata – Rhamnus alnifolia **S1**

- known only from Montane meadows adjacent to the South Castle River (Fairbarns 1986)
- *Artemisia tridentata* grows on gravel of old creek beds
- *Rhamnus alnifolia* grows in moister areas of the meadow with finer-textured soils
- these meadows are heavily disturbed
- also described as B16. *Artemisia tridentata – Rhamnus alnifolia / Poa pratensis* (Willoughby *et al.* 1997a)

***Betula occidentalis* group**

Betula occidentalis - Amelanchier alnifolia / Artemisia campestris - Elymus lanceolatus (Agropyron dasystachyum) **S1**

- a Montane dune / swale community of sandy areas
- *Betula occidentalis* and *Amelanchier alnifolia* form dense patches on dunes that are up to 2m high
- scattered *Artemisia campestris* and *Elymus lanceolatus* are the main species found between the dunes, but vegetation is sparse, with up to 90% bare sand

***Crataegus rotundifolia* group**

Crataegus rotundifolia / Heracleum lanatum – Urtica dioica – Viola canadensis **S1S2**

- A community found along small drainages on south-facing slopes in the Mixedgrass Natural Subregion
- *C. rotundifolia* forms dense clumps, often with a sparse understory
- *Crataegus douglasii* may also occur as a community; composition has not been documented

***Elaeagnus commutata* group**

Elaeagnus commutata **S2**

- minor Foothills and Montane type, ranked G2Q (TNC 1999)
- forms stringers on stream terraces
- Salix spp., Amelanchier alnifolia and Prunus virginiana often present

Elaeagnus commutata / Pascopyrum smithii **S3**

- a Northwest Great Plains community type, ranked G3? (TNC 1999)
- *Elaeagnus commutata* forms open thickets in mixedgrass
- often associated with Symphoricarpos occidentalis and Rosa woodsii

***Rhododendron lapponicum* group**

Rhododendron lapponicum floodplain community **S1**

- a Subalpine floodplain community
- dense thickets of *Rhododendron* up to 25 cm tall.

***Salix athabascensis* group**

Salix athabascensis string shrubland **SP**

- *Salix athabascensis* is a dominant on low hummocks and incipient strings in fens in the Wood Buffalo area in wetlands influenced by gypsum dissolution
- co-dominant associates are *Myrica gale, Betula glandulosa, Campylium stellatum*, and *Triglochin maritima* (Timoney 1997)
- known from the whooping crane nesting area in the Northwest Territories.
- may also occur in Alberta's Boreal Forest Natural Region.

***Salix bebbiana* group**

Salix bebbiana / Rubus strigosus / Geranium richardsonii **S2**

- groves dominated by *Salix bebbiana* found primarily in the Foothills Parkland (Wallis 1980)
- found on moderately to imperfectly drained sites
- significant tall herb component

***Salix drummondiana* group**

Salix drummondiana – Thalictrum venulosum **S1**

- an Upper Subalpine community of subhygric to hygric sites bordering creeks (Achuff 1984)
- *Salix barrattiana* is also a common component of this community type
- has a lush herb understory with low bryophyte cover
- may be allied with a more common *Salix – Deschampsia* type

Salix drummondiana / Scirpus microcarpus – Calamagrostis canadensis **S1**

- a Central Mixedwood riparian meadow bordering creeks (Timoney and Robinson 1998)

***Sarcobatus vermiculatus* herbaceous shrub group**

Sarcobatus vermiculatus silt dune community **S1**

- on minor dune complexes of silt and salts that develop on the east shore of alkali lakes in the Dry Mixedgrass Natural Subregion
- *Sarcobatus* may have up to 50% cover
- other species present include: *Chenopodium* spp., *Pascopyrum smithii*
- these communities are vulnerable to invasion by exotic species such as *Kochia scoparia, Chenopodium album, Bromus tectorum* and *Agropyron pectiniforme*

Sarcobatus vermiculatus / Pascopyrum smithii (Agropyron smithii) alluvial community **S2S3**

- can form extensive stands of scattered greasewood plants with a sparse cover of other species such as Atriplex argentea and Suaeda moquinii (Wershler and Wallis 1986)
- often associated with fine-textured alkaline soils on alluviated or fluvial flats adjacent to water courses or at the base of badland slopes in the Dry Mixedgrass Natural Subregion

DWARF SHRUBLAND

***Dryas integrifolia* group**

Dryas integrifolia – Carex rupestris **S1**

- Steep, east-facing slopes on Subalpine moraine with seepage
- up to 40% unvegetated
- type H15 (Corns and Achuff 1982)
- may be allied with a similar type known from Montana and ranked as globally rare

HERBACEOUS

***Artemisia frigida* group**

Agropyron albicans – Artemisia frigida **SU**

- found on west to south-east facing, subxeric, active slopes in the Montane or Subalpine
- *Prunus virginiana, Koeleria macrantha* and *Galium boreale* also usually present
- type based on reconnaissance-level information, needs more work

Elymus lanceolatus (Agropyron dasystachyum) - Artemisia frigida **SU**

- xeric, steep, south-facing slopes in Montane
- found on slopes subject to constant disturbance
- type H7 (Corns and Achuff 1982, Achuff *et al.* 1986)
- may be allied to a type typical of Grassland coulees

Koeleria macrantha – Artemisia frigida – Linum lewisii **S2S3**

- dry moderately level to sloping Montane community
- type H6 (Corns and Achuff 1982, Achuff *et al.* 1986)

***Artemisia norvegica* group**

Antennaria lanata – Artemisia norvegica **S1**

- Front range community on moraine (Achuff 1984)
- mesic to subhygric meadows of the Alpine and Upper Subalpine

Artemisia norvegica – Mertensia paniculata – Leymus innovatus (Elymus innovatus) **S1**

- Front range community on moraine (Achuff 1984)
- mesic to subhygric meadows of the Alpine and Upper Subalpine

***Calamovilfa longifolia* group**

Calamovilfa longifolia - Stipa comata **S3**

- a Dry Mixedgrass community of open vegetation on sandy soils
- other grasses commonly present include: *Bouteloua gracilis, Koeleria macrantha, Oryzopsis hymenoides, Sporobolus cryptandrus.*
- Sedges are rarely present
- ranked G3 (TNC 1997)

***Camassia quamash* group**

Camassia quamash meadow **S2?**

- a disturbance-dependant community of south-western Alberta
- found in the Foothills Parkland and Montane Natural Subregions
- sometimes grows in roadside ditches but only natural communities to be tracked

***Carex limosa* group**

Carex limosa – Scheuchzeria palustris – Sphagnum majus / S. jensenii / S. riparium **S1**

- a sphagnum-dominated fen with shallow pools (Vitt *et al.* 1975)
- may be restricted to the Swan Hills

***Carex nebrascensis* group**

Carex nebrascensis **S2**

- a community of the Mixedgrass Natural Subregion
- forms extensive, pure colonies along stream shores and in alkali seepage areas

***Carex pseudo-cyperus* group**

Carex pseudo-cyperus - Calla palustris **S1S2**

- *C. pseudo-cyperus* forms a definite, narrow band of vegetation at the edge of the open water around Parkland sloughs (Lewis, Dowding and Moss 1928) and the southern fringe of the Boreal Forest
- It also forms islets in stabilised beaver ponds where the water is shallow enough
- there is typically a significant *C. diandra* component
- *Calla palustris* forms floating mats at the edge of the *Carex* band

***Danthonia californica* group**

Danthonia californica – Carex brevior **S2**

- a Dry Mixedgrass community from mesic to subhydric sites, flooded annually (Eastern Slopes Rangeland Seeds Ltd., 1995)
- *Galium boreale* is usually a prominent species in this community

***Danthonia intermedia* group**

Carex spp. - Danthonia intermedia - Stipa curtiseta **S1**

- found on imperfectly drained sites of level to slightly undulating, solonetzic soils in the Peace River Parkland
- *Carex* species include: *C. siccata (foenea), C. obtusata, C. xerantica* and C. *eleocharis* (Wilkinson 1981)
- equivalent to Moss' (1952)*Agropyron trachycaulum – Stipa curtiseta type.*
- an upland type, with few remnants due to extensive cultivation in the region
- *Danthonia intermedia* types in the British Columbia Peace River parkland area are all cultivated (Pojar 1982)

***Danthonia unispicata* group**

Danthonia unispicata – Elymus lanceolatus (Agropyron dasystachyum) – Pascopyrum smithii (Agropyron smithii) **S2**

- found in mesic depressions in the Dry Mixedgrass Subregion (Eastern Slopes Rangeland Seeds Ltd., 1995)
- the cover of *Danthonia unispicata* is variable, perhaps tied to variations in annual precipitation

***Elymus trachycaulus (Agropyron trachycaulum)* group**

Elymus trachycaulus - Carex atherodes **S1**

- a Peace River Parkland community found in low, moist flat areas
- *Stipa curtiseta* is rare or lacking
- one of three faciations of grassland recognized by Moss (1952) for the Peace River Parkland

***Festuca altaica* group**

Festuca altaica / Leymus innovatus (Elymus innovatus) **S2**

- a Subalpine grassland on lower south-facing slopes (Bork 1991)
- often down-slope from dry pine stands
- preliminary information suggests that this is the main *F. altaica* grassland type

Festuca campestris group

Danthonia parryi – (Festuca idahoensis) - Festuca campestris **SU**

- generally found on subxeric to submesic, rapidly well drained sites with a southerly aspect in the Montane (Willoughby *et al.* 1997a)
- either *Danthonia parryi* or *Festuca idahoensis* may be dominant and *Festuca campestris* is usually prominent
- dry pockets within this community may have extensive *Juniperus communis* and *Arctostaphylos uva-ursi* cover

Festuca hallii group

Festuca hallii **S1**

- level terrain and lower slopes of undulating topography, inclined upland, hummocky areas on mesic sites in the Central Parkland and Northern Fescue Grassland
- *Festuca hallii* is clearly the predominant species
- on Black and Dark Brown Chernozemic soils
- stable climax type, ungrazed (Weerstra 1998)

Festuca hallii - Calamovilfa longifolia **S1**

- found in the Central Parkland and Northern Fescue Grassland
- on undulating sandy soils of glaciolacustrine and glaciofluvial deposits that typically have been reworked by wind
- sites tend to be drought prone
- *Festuca hallii* is the most abundant species, followed by *Calamovilfa longifolia* (Weerstra 1998)

Festuca hallii - Carex spp. / Arctostaphylos uva-ursi **S1**

- found on shallow soils of hill tops and steep south to south west facing coulee slopes in the Central Parkland and Northern Fescue Grassland
- xeric to mesic sites, frequently sandy
- *Festuca hallii* and *Arctostaphylos uva-ursi* are the most abundant species (Weerstra 1998)
- low upland sedges make up the majority of the *Carex* species

Festuca hallii - Koeleria macrantha / Juniperus horizontalis / forbs **S1**

- subxeric, steep, south and south west facing coulee slopes in the Central Parkland and Northern Fescue Grassland
- *Festuca hallii, Koeleria macrantha* and *Juniperus horizontalis* are the most abundant species
- *Thermopsis rhombifolia, Eriogonum flavum, Erigeron caespitosus* and *Hedysarum alpinum* are often present (Weerstra 1998)

Festuca hallii - Stipa curtiseta **S2**
- hill crests, south, southeast to southwest facing slopes of level to undulating topography and hummocky areas in the Central Parkland and Northern Fescue Grassland
- on Black and Dark Brown Chernozems and solonetzic sites
- stable climax type of drier sites or grazing- modified *Festuca hallii* sites
- includes *Festuca hallii - Stipa curtiseta - Carex spp.* and *Stipa curtiseta - Festuca hallii* types identified in Weerstra 1998

Festuca hallii - Stipa viridula **S1**
- steep south and west facing slopes on submesic to subxeric sites in the Central Parkland and Northern Fescue Grassland
- *Festuca hallii* is the most abundant species, followed by *Stipa viridula* (Weerstra 1998)

***Glyceria striata* group**

Glyceria striata **S1S2**
- found along slightly alkaline seepage springs in the Grassland Natural Region (Wallis 1977)
- a type with little documentation

***Hippuris vulgaris* group**

Hippuris vulgaris - Ranunculus circinatus - Callitriche sp. **SU**
- an aquatic community of standing water
- forms dense populations along Grassland creeks (Wallis 1977)
- aquatic communities are not well studied

***Isoetes echinospora* group**

Isoetes echinospora **S1**
- forms bands in shallow water on sandy substrate
- a community of the Boreal Forest and Canadian Shield Natural Regions

***Juncus drummondii* group**

Juncus drummondii – Carex saxatilis – Ranunculus nivalis **S1?**
- mesic Alpine meadow
- other species present include *Carex haydeniana, Equisetum arvense, Poa alpina* and *Salix glauca* (Kondla 1978)

***Lupinus nootkatensis* group**

Lupinus nootkatensis meadow **S2?**
- Upper Subalpine seepage meadow
- a main range community associated with quartzite substrates

***Phragmites australis* group**

Phragmites australis **S2S3**

- a Parkland and Boreal Forest semi-permanently flooded community of lakeshore and wetland fringes
- composed of pure stands of *Phragmites australis,* which can be quite extensive
- ranked G4 (TNC 1999)

***Polygonum amphibium* group**

Polygonum amphibium **SU**

- an aquatic community of almost pure *P. amphibian* found in the Grassland and Parkland natural regions
- a G3Q provisional type, with very little information available (TNC 1999)

***Pseudoroegneria spicata* (*Agropyron spicatum*) group**

Notes:

- all types are likely significant, but work needed on classification

Pseudoroegneria spicata **SU**

- found on subxeric to mesic sites in the Lower Subalpine
- sites tend to be well drained, moderate slopes with an easterly or southerly aspect
- type H42 (Achuff *et al.* 1997)

Pseudoroegneria spicata – Leymus innovatus (Elymus innovatus) – Aster conspicuus **SU**

- Montane community of dry, south west facing slopes
- occurs as small patches
- type H19 (Corns and Achuff 1982, Achuff *et al.* 1986)

Pseudoroegneria spicata - Festuca campestris **SU**

- found on subxeric to mesic sites in the Foothills Parkland and the Lower Subalpine Natural Subregions
- found on a variety of slopes and landforms, but usually in positions with southern exposure
- *Danthonia* spp. are absent
- type H27 (Achuff *et al.* 1997)

***Ruppia maritima* group**

Ruppia maritima **S2**

- a Grassland, and Parkland aquatic community, endemic to the Great Plains
- characteristic of hypersaline ponds (Wallis 1990)

***Schizachyrium scoparium* group**

Schizachyrium scoparium – Calamovilfa longifolia **S2**

- found in the Mixedgrass and Foothills Fescue Natural Subregions
- on barren slopes at the overlap of the Laurentian and Cordilleran tills
- along the major glacial spillway east of the Porcupine Hills
- *Bouteloua gracilis, Koeleria macrantha, Artemisia frigida* and *Liatris punctata* constant species
- *C. longifolia, Helictotrichon hookeri, Calamagrostis montanensis, Petalostemon purpureum* and *Helianthus petiolaris* are the differential species of the drier habitat type (Jaques 1979)

Schizachyrium scoparium – Festuca campestris **S1?**

- on subirrigated channel deposits south-west of Mud Lake in the Mixedgrass and Foothills Fescue Natural Subregions
- possibly equivalent to the S. *scoparium - Poa interior* type of Wallis (1980), a community type based on very preliminary information
- *Bouteloua gracilis, Koeleria macrantha, Artemisia frigida* and *Liatris punctata* are constant species
- *Pascopyrum smithii (Agropyron smithii), Festuca campestris (scabrella), Stipa comata* indicate a wetter type (Jaques 1979)

***Stipa comata* group**

Stipa comata - Festuca spp. **S1**

- a Dry Mixedgrass community found on the east-facing slope of a volcanic extrusion
- dominant species include *Stipa comata, Festuca saximontana* and *F. idahoensis*
- other species include: *Bouteloua gracilis, Poa sp., Allium textile, Koeleria macrantha , Geum triflorum, Carex filifolia, Vicia americana* and *Besseya wyomingensis.*

***Stipa curtiseta* group**

Stipa curtiseta - S. viridula - Carex sp. **S2S3**

- south west, south and south east facing 5 to 45% slopes
- found on the upper slopes in narrow canyons, down to terraces in wider valleys (Adams 1981)
- a community type essentially restricted to the slopes of river valleys in the Peace River Parkland and area

***Stipa richardsonii* group**

Stipa richardsonii – Koeleria macrantha – Antennaria parvifolia **S2S3**

- openings in forests and at forest edges on dry, south aspects in the Montane
- type H13 (Corns and Achuff 1982, Achuff *et al.* 1986)
- type A5. *Selaginella densa / Stipa richardsonii* (Willoughby *et. al* 1997a)

SPARSELY VEGETATED

***Artemisia longifolia* group**

Artemisia longifolia - Chrysothamnus nauseosus **S1**

- a badland community of the Dry Mixedgrass with up to 90% bare ground
- associated species include *Artemisia cana, Thermopsis rhombifolia, Hymenoxys richardsonii, Gutierrezia sarothrae, Gaura coccinea, Koeleria macrantha, Eriogonum flavum, Stephanomeria runcinata* and *Calamagrostis montanensis* (Smith 1993)

***Erigeron radicatus* group**

Erigeron radicatus - Phlox hoodii - Eriogonum flavum **S1**

- forms a distinct band at the edge of rocky outcrops and on knolls of hills
- a community of the Dry Mixedgrass Natural Subregion

***Juniperus horizontalis* group**

Juniperus horizontalis – Koeleria macrantha – Eriogonum flavum **S1S2**

- pediment vegetation on Bearpaw shale in the Dry Mixedgrass (Smith 1993)
- extensive juniper mats that may be on small on loose, silt dunes up to 2 m tall
- 25 to 50% bare ground with scattered *Eriogonum flavum*

Juniperus horizontalis – (Koeleria macrantha) / Cladina mitis **S1S2**

- stabilized blowouts in Central Parkland sand dunes
- *Cladina mitis* can contribute up to 20% of the cover (Fehr 1984)
- *Koeleria macrantha* is not always a significant component of the community

***Oryzopsis hymenoides* group**

Oryzopsis hymenoides – Elymus canadensis **S2?**

- sand blowouts / active sand dunes in the Dry Mixedgrass Natural Subregion (Wallis 1980)

***Penstemon ellipticus* group**

Penstemon ellipticus talus barren **S1?**

- an Alpine community found on unstable scree in slightly protected locations (Griffiths 1982)

***Puccinellia nuttalliana* group**

Puccinellia nuttalliana – Suaeda calceoliformis – Spergularia marina barren **S2**

- hyper-saline salt springs (Timoney and Robinson 1991)
- documented in the Central Mixedwood Natural Subregion

***Salicornia europaea* group**

Salicornia europaea **S2**

- a hypersaline marsh of the Grassland, Parkland and Boreal natural regions
- ranked G2 (TNC 1999)
- typically found at the edge of non-vegetated mudflats (Wallis 1990)
- *Salicornia europaea* may have less than 25% cover
- often grades into a *Puccinellia nuttalliana – Distichlis stricta* community

***Scirpus nevadensis* group**

Scirpus nevadensis - (Triglochin maritima) **S2S3**

- a saline emergent marsh of the Grassland and Parkland Natural Regions
- restricted to sandy saline shores
- usually with very open growth (Wallis 1990)

***Spartina gracilis* group**

Spartina gracilis - (Pascopyrum smithii) **S2S3**

- a saline dry meadow of the Grassland and Parkland natural regions (Wallis 1990)
- typically on open sandy sites, may be associated with slightly alkaline seepage springs

***Sporobolus cryptandrus* group**

Sporobolus cryptandrus active sand dune community **S2**

- disturbance community on sand, primarily in the Dry Mixedgrass Natural Subregion

***Suaeda moquinii* group**

Suaeda moquinii – Atriplex suckleyi sparsely vegetated badland slopes **S2?**

- badland community of crumbly shale or clay slopes along lower valleys in the Dry Mixedgrass Natural Subregions (Wershler and Wallis 1986)
- sparse cover of *Suaeda moquinii*
- scattered *Atriplex suckleyi*

***Triglochin maritima* group**

Triglochin maritima **S2**

- a Grassland and Parkland saline emergent marsh
- typically found on fine sand to sandy clay type
- forms a pure band of *Triglochin maritima*, usually with less than 20% cover
- Puccinellia nuttalliana is the principle associated species (Wallis 1990)

Preliminary Alberta Plant Community Watch List

FOREST / WOODLAND

***Picea mariana* alliance**

Picea mariana southernmost population (Bragg Creek) **SU**
- significant site due to disjunct nature

***Pinus albicaulis* alliance**

Abies lasiocarpa – Pinus albicaulis – Picea engelmannii / Vaccinium scoparium **S3**
- characteristic of mesic subalpine sites over a wide elevational range
- concern regarding impacts of pine blister rust on these communities

***Pseudotsuga menziesii* alliance**

Pseudotsuga menziesii / Leymus innovatus (Elymus innovatus) **S3?**
- found on subxeric, south-facing slopes in the Montane
- type C1 (Corns and Achuff 1982, Achuff *et al.* 1986)
- prescribed burning required to maintain this community type

SHRUBLAND

***Betula pumila* alliance**

Betula pumila – Salix spp. */ Carex* spp **S3?**
- Parkland string fens (sand plain fens in Wallis 1990)
- disjunct community, extremely localised
- further work is needed to characterise these communities

References Cited

Achuff, P. L. 1984. Cardinal Divide Area. Resource Description and Comparison with other Rocky Mountain Areas. Alberta Energy and Natural Resources. Edmonton, Alberta.

Achuff, P L., I. Pengelly and C. White. 1986. Special Resources of Banff National Park. Banff National Park, Warden Service.

Achuff, P .L., R.L. McNeil & M. L. Coleman. 1997. Ecological Land Classification of Waterton Lakes National Park, Alberta. Waterton Lakes National Park. Waterton Park, Alberta, 220 pp + maps.

Adams, B. 1981. Range Ecology and the Impact of Livestock grazing on the Peace River Slopes, Alberta. Public Lands Division. Edmonton, Alberta, 76 pp. + appendices

Adams, G.D., G. C. Trottier, W.L. Strong, ID.D Macdonald, S.J. Barry, P. G. Gregoire, G.W. Babish, G. Weiss. 1997. Vegetation Component Report. Canadian Forces Base Suffield National Wildlife Area Wildlife Inventory. Canadian Wildlife Service, Environment Canada. Edmonton, Alberta.

Alberta Energy and Natural Resources. 1984. Integrated Resource Inventory of the Deep Basin Area (NTS 83L). Volume II Vegetation Classification. Alberta Energy and Natural Resources, Edmonton, Alberta, 111 pp. + appendices.

Bork, E. 1991. Ecological Classification and Management of the Native Ranges in Willmore Wilderness Park. Alberta Forest Service. Edmonton, Alberta.

Comer, P., L. Allen, S. Cooper, D. Faber-Langendoen, G. Jones. 1999. Selected Shrubland and Grassland Communities of the Northern Great Plains. A Report to the Nebraska National Forest.. The Nature Conservancy. Boulder, Colorado. 119 pp.

Corns, I.G.W., and P. L. Achuff. 1982. Vegetation Type Descriptions in W. D. Holland and G. M. Coen (eds.). Ecological (Biophysical) Land Classification of Banff and Jasper National Parks. Alberta Institute of Pedology Pub. No. SS-82-44 1982.

Eastern Slopes Rangeland Seeds Ltd. 1995. A Five Year Summary of the Range Inventory and Select Species Monitoring in the Milk River Natural Area (1991-1995). The Milk River Management Committee.

Fairbarns, M. 1986. Conservation Values and management Concerns in the Candidate South Castle Natural Area. Alberta Forestry, Lands and Wildlife. Edmonton, Alberta.

Fehr, A.W. 1984. The Candidate Wainwright Ecological Reserve - A biophysical inventory. Alberta Energy and Natural Resources. Edmonton, Alberta

Griffiths, G.C.D. 1982. Vegetation Survey and Mapping of the Plateau Mountain Candidate Ecological Reserve. Alberta Forestry, Lands and Wildlife. Edmonton, Alberta.

Grossman, D.H., K.L. Goodin and C.L. Reuss, eds. 1994. Rare Plant Communities of the Conterminous United States, an Initial Survey. The Nature Conservancy, Arlington VA.

Holland, W.D. and G.M. Coen, editors. 1983. Ecological (Biophysical) Land Classification of Banff and Jasper National Parks. Vol. II: Soil and Vegetation Resources. Alberta Institute of Pedology, Pub No. M-83-2. 540 pp.

Jaques, D.R. 1979. Biophysical Classification, Effects of Grazing & Biomass Estimation Using LANDSAT Imagery on Native Fescue Grasslands of SW AB. U of C, Kananaskis Centre for Environmental Research. Calgary, Alberta. 123 pp

Kondla, N. 1978. An Overview Vegetation Survey of Kananaskis Provincial Park. Recreation, Parks and Wildlife. Edmonton, Alberta.

Lee, P., L. Allen, P. McIsaac. 1982. Vegetation and Flora of the Alpine and Upper Subalpine Zones - White Goat and Siffleur Wilderness Areas. Alberta Energy and Natural Resources. Edmonton, Alberta.

Lewis, F.J., E.S. Dowding and E.H. Moss. 1928. The Vegetation of Alberta. II. The Swamp, Moor and Bog Forest Vegetation of Central Alberta. J. of Ecology Vol. 16.

Moss, E.H. 1952. Grassland of the Peace River Region, Western Canada. Can. J. Botany. Vol 30: 98 – 124.

Pojar, J. 1982. Boreal and Subalpine Grasslands of Northern BC. In Nicholson, McLean and Baker, ed., Grassland Ecology and Classification Symposium Proceedings. June 1982. BC Ministry of Forests, Victoria BC

Raup, H.M. 1935. Botanical Investigations in Wood Buffalo Park. Bulletin No. 74, Biolobical Series, No. 20. Canada Dept. of Mines and National Museum of Canada. Ottawa, Ontario. 174 pp.

Smith, W. 1993. An assessment of Short-horned Lizard habitat and use, Manyberries badlands, Alberta. Alberta Fish and Wildlife, Lethbridge, Alberta

Strong, W.L. 1996. Vegetation Resource Survey and Impact Assessment of the Proposed Cheviot Mine and Associated Areas. Cardinal River Coals Ltd. Hinton, Alberta.

Timoney, K. P. 1996. The Logging of a World Heritage Site: Wood Buffalo National Park, Canada. September / October 1996. Vol. 72, No. 5, The Forestry Chronicle.

Timoney, K. P. 1997. The Summer Breeding Habitat of Whooping Cranes in Wood Buffalo National Park, Canada. Parks Canada. Wood Buffalo National Park. Ft. Smith, NT.

Timoney, K. P. 1999. Limber Pine, Whitebark Pine, Alpine Heath and Terricolous Alpine Lichen Vegetation Groups in Alberta. Alberta Environmental Protection. Edmonton, Alberta, 196 pp.

Timoney, K. P. and A. L. Robinson. 1991. Biophysical Inventory of the La Saline Natural Area. Alberta Forestry, Lands and Wildlife. Edmonton, Alberta.

Timoney, K. P. and A. L. Robinson. 1998. A Floristic and Landscape Survey of the Ft. Assiniboine Sandhills Wildland Park. Alberta Environmental Protection. Edmonton, Alberta.

TNC 1997. Selected Global Ranking Reasons and Element Summaries for Plant Associations in the Western U.S. The Nature Conservancy, Western Region. Boulder, Colorado.

TNC 1999. Western Regional Vegetation Classification. The Nature Conservancy, Western Region. Boulder, Colorado.

Vitt, D.H., P .L. Achuff and R .E. Andrus. 1975. The Vegetation and Chemical Properties of Patterned Fens in the Swan Hills, North Central Alberta. Can. J. Bot. 53: 2776-2795.

Wallis, C.W. 1977. Red Deer River Resource Evaluation. Alberta Recreation, Parks and Wildlife. Edmonton, Alberta.

Wallis, C.W. 1980. Montane, Foothills Parkland and Southwest Rivers Natural Landscapes Survey 1978-79. Alberta Recreation and Parks. Edmonton, Alberta.

Wallis, C. 1990. Reconnaissance Survey of Saline Wetlands and Springs in the Grassland-Parkland Region of Eastern Alberta. World Wildlife Fund and Alberta Forestry, Lands and Wildlife. Edmonton, Alberta.

Weerstra, B.G. and A.C. Holcroft Weerstra. 1998. Preliminary Classification of Plains Rough Fescue (Festuca hallii) Community Types within the Central Parkland Subregion of Alberta. Alberta Environmental Protection. Edmonton, Alberta, 15 pp. + appendices.

Wershler, C and C.W. Wallis. 1986. Lost River Significant Features Assessment. Alberta Forestry, Lands and Wildlife. Edmonton, Alberta.

Wilkinson, K. 1981. Remnant and Early Settlement Prairies and Solonetzic Soils in the Peace River District. University of Calgary, Masters Thesis, Department of Biology. Calgary, Alberta.

Willoughby, M. and D. Downing. 1995. Deciduous Plant Communities and Carrying Capacity for the Boreal Ecoprovince of Alberta. Environmental Protection, Lands and Forest Services, Edmonton. Edmonton, Alberta.

Willoughby, M., M.J. Alexander & K.M. Sundquist. 1997a. Range Plant Community Types and Carry Capacity for the Montane Subregion, Second approximation. Environmental Protection, Lands and Forest Services, Edmonton. Edmonton, Alberta, 146 pp.

Willoughby, M., K.M. Sundquist & D. Downing. 1997b. Range Plant Community Types and Carrying Capacity for the Dry and Central Mixedwood Subregions, Second approximation. Environmental Protection, Lands and Forest Services, Edmonton, Alberta. 144 + appendices

APPENDIX 1
PLANT COMMUNITIES OF CONSERVATION CONCERN, BY NATURAL REGION

The following tables list the plant community types on the preliminary tracking list by natural region, in alphabetical order of scientific name. Some community types occur in more than one natural region, and so appear in more than one table.

BOREAL FOREST NATURAL REGION

SCIENTIFIC NAME	COMMON NAME	SRANK	Group
Amelanchier alnifolia / Arctostaphylos uva-ursi / Oryzopsis pungens	saskatoon / common bearberry / northern rice grass	S2S3	Shrubland
Carex limosa – Scheuchzeria palustris – Sphagnum majus / S. jensenii / S. riparium	mud sedge - scheuchzeria - peat mosses	S1	Herbaceous
Carex pseudo-cyperus - Calla palustris	cypress-like sedge - water arum	S1S2	Herbaceous
Isoetes echinospora	northern quillwort	S1	Herbaceous
Larix laricina / Carex prairea	tamarack / prairie sedge	S1	Forest/ Woodland
Picea glauca / Alnus tenuifolia – Betula neoalaskana / Equisetum pratense / Hylocomium splendens	white spruce / river alder - Alaska birch / meadow horsetail / stair-step moss	S3	Forest/ Woodland
Picea glauca / Cetraria islandica	white spruce / lichen	S1	Forest/ Woodland
Populus balsamifera / Alnus tenuifolia / Cornus stolonifera / Equisetum pratense	balsam poplar / river alder / red-osier dogwood / meadow horsetail	S3	Forest/ Woodland
Populus balsamifera / Viburnum opulus / Matteuccia struthiopteris	balsam poplar / high-bush cranberry / ostrich fern	S1S2	Forest/ Woodland
Populus tremuloides / Rubus parviflorus / Arailia nudicaulis	aspen / thimbleberry / wild sarsaparilla	S2S3	Forest/ Woodland
Populus tremuloides / Salix bebbiana-Corylus cornuta / Calamagrostis canadensis – Matteuccia struthiopteris	aspen / Bebb's willow - beaked hazelnut / bluejoint - ostrich fern	S1	Forest/ Woodland
Puccinellia nuttalliana – Suaeda calceoliformis – Spergularia marina barren	Nuttall's salt-meadow grass - western sea-blite - salt-marsh sand spurry barren	S2	Sparsely Vegetated
Salix athabascensis string shrubland	Athabasca willow string shrubland	SP	Shrubland
Salix drummondiana / Scirpus microcarpus – Calamagrostis canadensis	Drummond's willow / small-fruited bulrush - bluejoint	S1	Shrubland
Phragmites australis	reed	S2S3	Herbaceous
Salicornia europaea	samphire	S2	Sparsely Vegetated

ROCKY MOUNTAIN NATURAL REGION

SCIENTIFIC NAME	COMMON NAME	SRANK	Group
Abies lasiocarpa – Pinus albicaulis – Picea engelmannii / Empetrum nigrum	subalpine fir - whitebark pine - Engelmann spruce / crowberry	S2	Forest/ Woodland
Abies lasiocarpa – Pinus albicaulis / Xerophyllum tenax	subalpine fir - whitebark pine / beargrass	S1S2	Forest/ Woodland
Abies lasiocarpa – Pinus flexilis – Populus tremuloides / Thalictrum venulosum	subalpine fir - limber pine - aspen / veiny meadow rue	S2?	Forest/ Woodland
Agropyron albicans – Artemisia frigida	awned northern wheat grass - pasture sagewort	SU	Herbaceous
Antennaria lanata – Artemisia norvegica	woolly everlasting - mountain sagewort	S1	Herbaceous
Artemisia norvegica – Mertensia paniculata – Leymus innovatus	mountain sagewort - tall lungwort - hairy wild rye	S1	Herbaceous
Artemisia tridentata – Rhamnus alnifolia	big sagebrush - alder-leaved buckthorn	S1	Shrubland
Artemisia tridentata slope community	big sagebrush slope community	S1	Shrubland
Betula occidentalis - Amelanchier alnifolia / Artemisia campestris - Elymus lanceolatus (Agropyron dasystachyum)	water birch - saskatoon / plains wormwood - northern wheat grass	S1	Shrubland
Betula papyrifera / Betula occidentalis / Arctostaphylos uva-ursi	white birch / water birch / common bearberry	S1	Forest/ Woodland
Camassia quamash meadow	blue camas meadow	S2?	Herbaceous
Crataegus rotundifolia / Heracleum lanatum - Urtica dioica - Viola canadensis	round-leaved hawthorn / cow parsnip - common nettle - western Canada violet	S1S2	Shrubland
Danthonia parryi – (Festuca idahoensis) - Festuca campestris	Parry oat grass - (Idaho fescue) - mountain rough fescue	SU	Herbaceous
Dryas integrifolia – Carex rupestris	white mountain avens - rock sedge	S1	Dwarf Shrubland
Elymus lanceolatus - Artemisia frigida	northern wheat grass - pasture sagewort	SU	Herbaceous
Festuca altaica - Leymus innovatus (Elymus innovatus)	northern rough fescue - hairy wild rye	S2	Herbaceous
Juncus drummondii – Carex saxatilis – Ranunculus nivalis (Kondla 1978)	Drummond's rush - rocky-ground sedge - snow buttercup	S1?	Herbaceous
Koeleria macrantha – Artemisia frigida – Linum lewisii	June grass - pasture sagewort - wild blue flax	S2S3	Herbaceous
Larix lyallii / Luzula hitchcockii	subalpine larch / smooth wood rush	S2?	Forest/ Woodland
Larix occidentalis / Calamagrostis rubescens	western larch / pine reed grass	S1	Forest/ Woodland
Lupinus nootkatensis meadow	Nootka lupine meadow	S2?	Herbaceous

Penstemon ellipticus talus barren	creeping beardtongue talus barren	S1?	Sparsely Vegetated
Picea engelmannii - Abies lasiocarpa / Dryas octopetala	Engelmann spruce - subalpine fir / white mountain avens	S2S3	Forest/ Woodland
Picea engelmannii – Abies lasiocarpa / Salix planifolia / Hylocomium splendens	Engelmann spruce - subalpine fir / flat-leaved willow / stair-step moss	S1	Forest/ Woodland
Picea engelmannii – Abies lasiocarpa / Salix vestita / Cassiope tetragona	Engelmann spruce - subalpine fir / rock willow / white mountain-heather	S2	Forest/ Woodland
Picea engelmannii / Leymus innovatus	Engelmann spruce / hairy wild rye	S2	Forest/ Woodland
Picea engelmannii / Salix drummondiana	Engelmann spruce / Drummond's willow	S1?	Forest/ Woodland
Picea engelmannii / Salix spp.	Engelmann spruce / willow spp.	S2?	Forest/ Woodland
Picea glauca / Betula pumila-Salix spp. / Carex spp	white spruce / dwarf birch - willow spp. / sedge spp.	S1?	Forest/ Woodland
Picea glauca / Rosa acicularis / Thuidium abietinum	white spruce / prickly rose / fern moss	S1	Forest/ Woodland
Picea glauca / Shepherdia canadensis / Thuidium abietinum	white spruce / Canada buffaloberry / fern moss	S2	Forest/ Woodland
Picea glauca / Thuidium abietinum	white spruce / fern moss	S2S3	Forest/ Woodland
Pinus albicaulis – Picea engelmannii / Dryas octopetala	whitebark pine - Engelmann spruce / white mountain avens	S1	Forest/ Woodland
Pinus albicaulis – Pinus contorta / Juniperus communis – Leymus innovatus – Linnaea borealis	whitebark pine - lodgepole pine / ground juniper - hairy wild rye	S2S3	Forest/ Woodland
Pinus albicaulis / Juniperus communis – Arctostaphylos uva ursi	whitebark pine / ground juniper - common bearberry	S2S3	Forest/ Woodland
Pinus albicaulis-Abies lasiocarpa / Luzula hitchcockii-Vaccinium myrtillus	whitebark pine - subalpine fir / smooth wood rush - low bilberry	S1S2	Forest/ Woodland
Pinus flexilis - Pseudotsuga menziesii / Juniperus spp. / Arctostaphylos uva-ursi	limber pine - Douglas-fir / juniper species / common bearberry	S2	Forest/ Woodland
Pinus flexilis / Arctostaphylos uva ursi - Juniperus horizontalis	limber pine / common bearberry - creeping juniper	S2S3	Forest/ Woodland
Populus balsamifera - P. tremuloides / Alopecurus alpinus - Calamagrostis canadensis	balsam poplar - aspen / alpine foxtail - bluejoint	S1S2	Forest/ Woodland
Populus tremuloides / Leymus innovatus – Aster conspicuus avalanche community	aspen / hairy wild rye - showy aster	S2	Forest/ Woodland
Populus tremuloides / Menziesia ferruginea	aspen / false azalea	S1	Forest/ Woodland

Populus tremuloides / Rubus parviflorus	aspen / thimbleberry	S2	Forest/ Woodland
Pseudoroegneria spicata	bluebunch wheat grass	SU	Herbaceous
Pseudoroegneria spicata - Festuca scabrella	bluebunch wheat grass - rough fescue	SU	Herbaceous
Pseudoroegneria spicata – Leymus innovatus – Aster conspicuus	bluebunch wheat grass - hairy wild rye - showy aster	SU	Herbaceous
Pseudotsuga menziesii - Pinus flexilis / Juniperus communis / Festuca campestris	Douglas-fir - limber pine / ground juniper / mountain rough fescue	S2S3	Forest/ Woodland
Rhododendron lapponicum floodplain	Lapland rose-bay floodplain	S1	Shrubland
Salix drummondiana – Thalictrum venulosum	Drummond's willow - veiny meadow rue	S1	Shrubland
Stipa richardsonii – Koeleria macrantha – Antennaria parvifolia	Richardson's needle grass - June grass - small-leaved everlasting	S2S3	Herbaceous
Elaeagnus commutata	silverberry	S2	Shrubland

FOOTHILLS NATURAL REGION

SCIENTIFIC NAME	COMMON NAME	SRANK	Group
Populus tremuloides – P. balsamifera / Alnus viridus / Calamagrostis canadensis	aspen - balsam poplar / green alder / bluejoint	S1	Forest/ Woodland
Elaeagnus commutata	silverberry	S2	Shrubland

PARKLAND NATURAL REGION

SCIENTIFIC NAME	COMMON NAME	SRANK	Group
Carex pseudo-cyperus - Calla palustris	cypress-like sedge - water arum	S1S2	Herbaceous
Carex spp. - Danthonia intermedia - Stipa curtiseta	sedges - intermediate oat grass - western porcupine grass	S1	Herbaceous
Elymus trachycaulus - Carex atherodes	slender wheat grass - awned sedge	S1	Herbaceous
Juniperus horizontalis – (Koeleria macrantha) / Cladina mitis	creeping juniper - (June grass) / green reindeer lichen	S1S2	Sparsely Vegetated
Salix bebbiana / Rubus idaeus / Geranium richardsonii	Bebb's willow / wild red raspberry / wild white geranium	S2	Shrubland
Stipa curtiseta - S. viridula - Carex sp.	western porcupine grass - green needle grass - sedges	S2S3	Herbaceous
Phragmites australis	reed	S2S3	Herbaceous
Polygonum amphibium	water smartweed	SU	Herbaceous
Ruppia maritima	widgeon-grass	S2	Herbaceous
Scirpus nevadensis - (Triglochin maritima)	Nevada bulrush - (seaside arrow-grass)	S2S3	Herbaceous

Spartina gracilis - (Pascopyrum smithii)	alkali cord grass - (western wheat grass)	S2S3	Sparsely Vegetated
Triglochin maritima	seaside arrow-grass	S2	Sparsely Vegetated
Salicornia europaea	samphire	S2	Sparsely Vegetated

GRASSLAND NATURAL REGION

SCIENTIFIC NAME	COMMON NAME	SRANK	Group
Acer negundo / Prunus virginiana	Manitoba maple / choke cherry	S1S2	Forest/ Woodland
Artemisia cana / Stipa comata Shrub Herbaceous	silver sagebrush / needle-and-thread	S2S3	Shrubland
Artemisia longifolia - Chrysothamnus nauseosus	long-leaved sagewort - rabbitbrush	S1	Sparsely Vegetated
Calamovilfa longifolia - Stipa comata	sand grass - needle-and-thread	S3	Herbaceous
Carex nebrascensis	Nebraska sedge	S2	Herbaceous
Danthonia californica – Carex brevior	California oat grass - slender-beaked sedge	S2	Herbaceous
Danthonia unispicata – Elymus lanceolatus – Pascopyrum smithii	one-spike oat grass - northern wheat grass - western wheat grass	S2	Herbaceous
Elaeagnus commutata / Pascopyrum smithii	silverberry / western wheat grass	S3	Shrubland
Erigeron radicatus complex	dwarf fleabane complex	S1	Sparsely Vegetated
Festuca hallii	plain's rough fescue	S1	Herbaceous
Festuca hallii - Calamovilfa longifolia	plain's rough fescue - sand grass	S1	Herbaceous
Festuca hallii - Carex spp. / Arctostaphylos uva-ursi	plain's rough fescue - sedges / common bearberry	S1	Herbaceous
Festuca hallii - Koeleria macrantha / Juniperus horizontalis / forbs	plain's rough fescue - June grass / creeping juniper / forbs	S1	Herbaceous
Festuca hallii - Stipa curtiseta	plain's rough fescue - western porcupine grass	S2	Herbaceous
Festuca hallii - Stipa viridula / forbs	plain's rough fescue - green needle grass / forbs	S1	Herbaceous
Glyceria striata	fowl manna grass	S1S2	Herbaceous
Hippuris vulgaris - Ranunculus circinatus - Callitriche sp.	common mare's-tail - white water crowfoot - water-starwort	SU	Herbaceous
Juniperus horizontalis – Koeleria macrantha - Eriogonum flavum	creeping juniper - June grass - yellow umbrella-plant	S1S2	Sparsely Vegetated
Oryzopsis hymenoides - Leymus canadensis	Indian rice grass - hairy wild rye	S2?	Sparsely Vegetated

Populus X jackii – Betula occidentalis / Salix lutea / Stipa comata	cottonwood - water birch / yellow willow / needle-and-thread	S1	Forest/ Woodland
Sarcobatus vermiculatus / Pascopyrum smithii	greasewood / western wheat grass	S2S3	Shrubland
Sarcobatus vermiculatus silt dune community	greasewood silt dune community	S1	Shrubland
Schizachyrium scoparium – Calamovilfa longifolia	little bluestem - sand grass	S2	Herbaceous
Schizachyrium scoparium – Festuca campestris	little bluestem - mountain rough fescue	S1?	Herbaceous
Sporobolus cryptandrus active dune	sand dropseed active dune	S2	Sparsely Vegetated
Stipa comata - Festuca spp.	needle-and-thread – fescues	S1	Herbaceous
Suaeda moquinii – Atriplex suckleyi sparsely vegetated badland slopes	Moquin's sea-blite - endolepis sparsely vegetated badland slopes	S2?	Sparsely Vegetated
Polygonum amphibium	water smartweed	SU	Herbaceous
Ruppia maritima	widgeon-grass	S2	Herbaceous
Scirpus nevadensis - (Triglochin maritima)	Nevada bulrush - (seaside arrow-grass)	S2S3	Herbaceous
Spartina gracilis - (Pascopyrum smithii)	alkali cord grass - (western wheat grass)	S2S3	Herbaceous
Triglochin maritima	seaside arrow-grass	S2	Sparsely Vegetated
Salicornia europaea	samphire	S2	Sparsely Vegetated